Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of claims:

Claims 1-6 (cancelled).

Claim 7 (previously amended): A rotating drum pressure differential filter comprising:

a drum rotatable about an axis of rotation, said drum including at least one wall having an inner surface that at least partially defines an inner chamber, and an outer surface, said wall including at least one opening for allowing the passage of fluid from outside the drum to said inner chamber;

a drive to rotate said drum about said axis of rotation;

a source of differential pressure to provide a lower pressure in said inner chamber than outside said drum;

a container for containing a sample medium having components to be separated, said container being positioned with respect to said drum such that, in operation, said drum is rotated about said axis of rotation and at least a portion of a layer of filter medium applied to the outside surface of said drum rotates within the container to contact a sample medium disposed within the container;

a scraper adapted to be positioned adjacent said drum for scraping a layer of filter medium from said drum; and

an applicator adapted to be positioned adjacent said drum between said scraper and said container for directing a layer of filter medium toward said outer surface,

wherein said applicator comprises at least one nozzle, a pressurized gas conduit, a pressurized filter medium conduit, and a nozzle that combines pressurized gas from said pressurized gas conduit with pressurized filter medium from said pressurized filter medium conduit, to form a spray;

wherein said pressurized filter medium conduit is disposed within said pressurized gas conduit; and

wherein said nozzle includes an orifice plate having a backside which in operation contacts filter medium flowing through said pressurized filter medium conduit, a front side opposite said backside, and an opening through said orifice plate to allow for the passage of filter medium from said pressurized filter medium conduit through said nozzle.

Claim 8 (original): The filter of claim 7, wherein in operation filter medium flows through said pressurized filter medium conduit in a direction substantially tangential to the backside of said orifice plate.

Claim 9 (currently amended): A rotating drum pressure differential filter comprising:

a drum rotatable about an axis of rotation, said drum including at least one wall having an inner surface that at least partially defines an inner chamber, and an outer surface, said wall including at least one opening for allowing the passage of fluid from outside the drum to said inner chamber;

a drive to rotate said drum about said axis of rotation;

a source of differential pressure to provide a lower pressure in said inner chamber than outside said drum;

a container for containing a sample medium having components to be separated, said container being positioned with respect to said drum such that, in operation, said drum is rotated about said axis of rotation and at least a portion of a layer of filter medium applied to the outside surface of said drum rotates within the container to contact a sample medium disposed within the container;

a scraper adapted to be positioned adjacent said drum for scraping a layer of filter medium from said drum; and

an applicator adapted to be positioned adjacent said drum between said scraper and said container for directing a layer of filter medium toward said outer surface~~;~~,

wherein said applicator comprises at least one nozzle, a pressurized gas conduit for carrying a pressurized gas, and a pressurized filter medium conduit for carrying a pressurized filter medium slurry; ~~,and a nozzle that combines pressurized gas from said pressurized gas conduit with pressurized filter medium from said pressurized filter medium conduit, to form a spray; and~~

~~wherein filter medium is circulated through said pressurized filter medium conduit;~~

wherein the at least one nozzle is capable of combining pressurized gas from said pressurized gas conduit with pressurized filter medium slurry from said pressurized filter medium conduit, to form a spray.

Claims 10-16 (cancelled).

Claim 17 (original): A rotating drum pressure differential filter comprising:

a drum rotatable about an axis of rotation, said drum including at least one wall having an inner surface that at least partially defines an inner chamber, and an outer surface, said wall

including at least one opening for allowing the passage of fluid from outside the drum to said inner chamber;

a drive to rotate said drum about said axis of rotation;

a source of differential pressure to provide a lower pressure in said inner chamber than outside said drum;

a container for containing a sample medium having components to be separated, said container being positioned with respect to said drum such that, in operation, said drum is rotated about said axis of rotation and at least a portion of a layer of filter medium applied to the outside surface of said drum rotates within the container to contact a sample medium disposed within the container;

a scraper adapted to be positioned adjacent said drum for scraping a layer of filter medium from said drum;

an applicator adapted to be positioned adjacent said drum between said scraper and said container for directing a layer of filter medium toward said outer surface; and

means to simultaneously operate said scraper and said applicator such that, in operation, said applicator directs a layer of filter medium toward said outer surface at the same time that said scraper scrapes a layer of filter medium from said drum.

Claim 18 (original): The filter of claim 17, further comprising a filter medium applied to the outer surface of said drum as a layer which can be scraped off of said outer surface, said filter medium being capable of covering said at least one opening and separating components that can pass through said layer and through said at least one opening from components that cannot pass through said layer.

Claim 19 (original): The filter of claim 17, wherein said applicator and said scraper are fixed with respect to each other by a mounting means that maintains said applicator at a constant distance away from an outer surface of a layer of filter medium scraped by said scraper.

Claims 20-41 (cancelled).

Claim 42 (previously amended): A rotating drum pressure differential filter system comprising:

at least a first and a second rotating drum pressure differential filter, each of said first and second filters comprising;

a drum rotatable about an axis of rotation, said drum including at least one wall having an inner surface that at least partially defines an inner chamber, and an outer surface, said wall including at least one opening for allowing the passage of fluid from outside the drum to said inner chamber;

a drive to rotate said drum about said axis of rotation;

a source of differential pressure to provide a lower pressure in said inner chamber than outside said drum;

a container for containing a sample medium having components to be separated, said container being positioned with respect to said drum such that, in operation, said drum is rotated about said axis of rotation and at least a portion of a layer of filter medium applied to the outside surface of said drum rotates within the container to contact a sample medium disposed within the container;

at least one of said first and second rotating drum pressure differential filters having a scraper to remove sample medium, filter medium, or both, from the respective outer surface; and

a conveyor to convey scraped sample medium, scraped filter medium, or both, from one of said first and second rotating drum pressure differential filters for use in the other of said first and second rotating drum pressure differential filters;

wherein at least one of said containers of said first and second filters contains a sample medium and said sample medium comprises at least one enzyme and at least one other component to be separated from said at least one enzyme.

Claim 43 (previously amended): A rotating drum pressure differential filter system comprising:

at least a first and a second rotating drum pressure differential filter, each of said first and second filters comprising;

a drum rotatable about an axis of rotation, said drum including at least one wall having an inner surface that at least partially defines an inner chamber, and an outer surface, said wall including at least one opening for allowing the passage of fluid from outside the drum to said inner chamber;

a drive to rotate said drum about said axis of rotation;

a source of differential pressure to provide a lower pressure in said inner chamber than outside said drum;

a container for containing a sample medium having components to be separated, said container being positioned with respect to said drum such that, in operation, said drum is rotated about said axis of rotation and at least a portion of a layer of filter medium applied to the outside surface of said drum rotates within the container to contact a sample medium disposed within the container;

at least one of said first and second rotating drum pressure differential filters having a scraper to remove sample medium, filter medium, or both, from the respective outer surface; and

a conveyor to convey scraped sample medium, scraped filter medium, or both, from one of said first and second rotating drum pressure differential filters for use in the other of said first and second rotating drum pressure differential filters;

wherein at least one of said containers of said first and second filters contains a sample medium and said sample medium comprises a fermentation broth.

Claim 44 (previously amended): A rotating drum pressure differential filter system comprising:

at least a first and a second rotating drum pressure differential filter, each of said first and second filters comprising;

a drum rotatable about an axis of rotation, said drum including at least one wall having an inner surface that at least partially defines an inner chamber, and an outer surface, said wall

including at least one opening for allowing the passage of fluid from outside the drum to said inner chamber;

a drive to rotate said drum about said axis of rotation;

a source of differential pressure to provide a lower pressure in said inner chamber than outside said drum;

a container for containing a sample medium having components to be separated, said container being positioned with respect to said drum such that, in operation, said drum is rotated about said axis of rotation and at least a portion of a layer of filter medium applied to the outside surface of said drum rotates within the container to contact a sample medium disposed within the container;

at least one of said first and second rotating drum pressure differential filters having a scraper to remove sample medium, filter medium, or both, from the respective outer surface; and

a conveyor to convey scraped sample medium, scraped filter medium, or both, from one of said first and second rotating drum pressure differential filters for use in the other of said first and second rotating drum pressure differential filters;

wherein at least one of said first and second filters further comprises a filter medium, applied as a layer to the outer surface of the respective drum of the filter, and which can be scraped off of the outer surface of said respective drum, said filter medium being capable of covering said at least one opening and separating components that can pass through said layer and through the respective at least one opening from components that cannot pass through said layer; and

wherein said filter medium comprises diatomaceous earth.

Claims 45-76 (cancelled).

Claim 77 (new): The rotating drum pressure differential filter system of claim 42, wherein at least one of the rotating drum pressure differential filters further comprises:

an applicator adapted to be positioned adjacent said drum between said scraper and said container for directing a layer of filter medium toward said outer surface;

wherein said applicator comprises at least one nozzle, a pressurized gas conduit for carrying a pressurized gas, and a pressurized filter medium conduit for carrying a pressurized filter medium slurry, and the at least one nozzle is capable of combining pressurized gas from said pressurized gas conduit with pressurized filter medium slurry from said pressurized filter medium conduit, to form a spray.

Claim 78 (new): The rotating drum pressure differential filter system of claim 77, wherein a pressurized filter medium slurry is disposed within the pressurized filter medium conduit.

Claim 79 (new): The rotating drum pressure differential filter system of claim 77, wherein each of the first and second rotating drum pressure differential filters includes at least one nozzle connected to the pressurized filter medium conduit.

Claim 80 (new): The rotating drum pressure differential filter system of claim 43, wherein at least one of the rotating drum pressure differential filters further comprises:

an applicator adapted to be positioned adjacent said drum between said scraper and said container for directing a layer of filter medium toward said outer surface;

wherein said applicator comprises at least one nozzle, a pressurized gas conduit for carrying a pressurized gas, and a pressurized filter medium conduit for carrying a pressurized filter medium slurry, and the at least one nozzle is capable of combining pressurized gas from said pressurized gas conduit with pressurized filter medium slurry from said pressurized filter medium conduit, to form a spray.

Claim 81 (new): The rotating drum pressure differential filter system of claim 80, wherein a pressurized filter medium slurry is disposed within the pressurized filter medium conduit.

Claim 82 (new): The rotating drum pressure differential filter system of claim 80, wherein each of the first and second rotating drum pressure differential filters includes at least one nozzle connected to the pressurized filter medium conduit.

Claim 83 (new): The rotating drum pressure differential filter system of claim 44, wherein at least one of the rotating drum pressure differential filters further comprises:

an applicator adapted to be positioned adjacent said drum between said scraper and said container for directing a layer of filter medium toward said outer surface;

wherein said applicator comprises at least one nozzle, a pressurized gas conduit for carrying a pressurized gas, and a pressurized filter medium conduit for carrying a pressurized filter medium slurry, and the at least one nozzle is capable of combining pressurized gas from said

pressurized gas conduit with pressurized filter medium slurry from said pressurized filter medium conduit, to form a spray.

Claim 84 (new): The rotating drum pressure differential filter system of claim 83, wherein a pressurized filter medium slurry is disposed within the pressurized filter medium conduit.

Claim 85 (new): The rotating drum pressure differential filter system of claim 83, wherein each of the first and second rotating drum pressure differential filters includes at least one nozzle connected to the pressurized filter medium conduit.

Claim 86 (new): A rotating drum pressure differential filter comprising:

a drum rotatable about an axis of rotation, said drum including at least one wall having an inner surface that at least partially defines an inner chamber, and an outer surface, said wall including at least one opening for allowing the passage of fluid from outside the drum to said inner chamber;

a drive to rotate said drum about said axis of rotation;

a source of differential pressure to provide a lower pressure in said inner chamber than outside said drum;

a container for containing a sample medium having components to be separated, said container being positioned with respect to said drum such that, in operation, said drum is rotated about said axis of rotation and at least a portion of a layer of filter medium applied to the outside

surface of said drum rotates within the container to contact a sample medium disposed within the container;

a scraper adapted to be positioned adjacent said drum for scraping a layer of filter medium from said drum; and

an applicator adapted to be positioned adjacent said drum between said scraper and said container for directing a layer of filter medium toward said outer surface, said applicator comprising at least one nozzle, a pressurized gas conduit, a pressurized filter medium conduit, a pressurized filter medium slurry disposed within the pressurized filter medium conduit, and a pressurized gas disposed within the pressurized gas conduit;

wherein the nozzle is capable of combining the pressurized gas from said pressurized gas conduit with the pressurized filter medium slurry from said pressurized filter medium conduit, to form a spray comprising a filter medium slurry.

Claim 87 (new): The rotating drum pressure differential filter of claim 86, wherein the filter medium slurry comprises diatomaceous earth.